

other genera, appear to be formed upon a single type, contributes naturally to the common opinion that the genus has few but much-varying species. In describing the Greenland forms, Prof. Agardh has endeavoured to show that besides the difference in form, deviations also occur which ought to be retained as characteristics. In a preceding memoir he had stated that the differences noticed by other algologists in the antheridia and spores being formed in the same or in separate receptacles may possibly be explained thus: namely, that in different seasons the receptacles differ in this respect. Should such an explanation prove to be erroneous, it will undoubtedly be seen that it is these differences, more than others, that deserve to be considered as the characteristics of species.

The reader who wishes for further information relative to the species of Algae inhabiting the Arctic seas is referred to the list of Arctic Algae in Harvey's *Ner. Bor. Americana*, and to Dr. Dickie's List of Algae obtained in Cumberland Sound (Journal of Linn. Soc. vol. ix.) Perhaps also some of the Algae collected by Dr. Lyall on the north-west coast of America, thirty-two of which had not been found elsewhere, may extend to the Arctic Sea. See Harvey's List of Algae, collected by Dr. Lyall, *Journ. of Linn. Soc.* vol. vi.

MARY P. MERRIFIELD.

SCIENTIFIC SERIALS

American Journal of Science and Arts, April.—The principal contents of this number are: The history of Young's discovery of his theory of colours, by Alfred M. Mayer. The aim of this paper is to give extracts from Newton, Young, and Wollaston, which embody the early literature of Young's celebrated theory of colour, and to furnish a history of the steps by which he was led to the adoption of what is now known as Young's theory of colour-sensation.—A re-determination of the constants of the law connecting the pitch of a sound with the duration of its residual sensation, by Alfred M. Mayer. This article refers to a previous article of October 1874 on the same subject. Since then, Madame Seiler (who assisted Helmholtz) and Dr. Carl Seiler have spent considerable time in re-determining the durations of the residual sonorous sensations, using Mr. Mayer's apparatus. From their experiments he has found the law given before as $D = \left(\frac{53248}{N+23} + 24 \right) \cdot 0001$ requires to be modified to $D = \frac{3 \cdot 2}{N+31} + \cdot 0022$, where D = the durations of the

residual sonorous sensation corresponding to N number of vibrations per second.—On the action of the less refrangible rays of light on silver, iodide, and bromide, by Carey Lea. The result of 160 very concordant experiments shows that AgBr and AgI are sensitive to all the visible rays of the spectrum. AgI is more sensitive than AgBr to all the less refrangible rays and also to white light. The sensitiveness of AgBr to the green rays was materially increased by the presence of free silver nitrate. AgBr and AgI together are more sensitive to both the green and the red rays than either AgI or AgBr separately.—On the Silurian age of the Southern Appalachians, by F. H. Bradley. First portion (to be continued).—Spectroscopic examination of gases from meteoric iron, by Arthur W. Wright. On the supposition that meteoric iron has received its hydrogen and other gases from the sun or some other body having a similar atmosphere of great density, it seemed probable that a spectroscopic examination might reveal the unknown gaseous elements assumed to be present in the solar corona. Only negative results were obtained. But the fact incidentally observed of the varying character of the oxygen and hydrogen lines in the presence of hydrogen, and the near coincidence of two of them with prominent coronal lines, with the possible coincidence of a third line, goes to show that the characteristic lines in the spectrum of the corona, so far from indicating the presence of otherwise unknown elements, are simply due to hydrogen and the gases of the air, oxygen and nitrogen.—On the duplicity of the principal star of $\Sigma 1097$, by S. W. Burnham.—The original notes under the head of Scientific Intelligence are: Progress of Geological Survey of Canada, 1873-74; the genera *Opisthoptera* (Meek, 1872) and *Anomalodonta* (Miller, 1874); the Gulf of Mexico in the Miocene time.

Der Naturforscher, Nos. 1 to 5, 1875.—This part contains many papers reprinted from other journals, besides several original contributions. We note the following:—On the physiological

action of amyl nitrite and the causes of blushing; investigations made by Herr Wilhelm Filehne, who found that amyl nitrite acts upon that part of the brain which is also acted upon when the individual has the feeling of shame and blushes. The most interesting part of the paper is the description of the effects of amyl nitrite upon animals; accelerated breathing and palpitations were the result, evidently similar to the physiological phenomenon in man. In the latter case, whether produced by the ether or by psychic emotion, the phenomenon is exactly the same.—Report on the Crustacea observed on board the *Challenger* between the Cape of Good Hope and Australia, in the Antarctic seas, by Willemoes-Suhm.—On the ascending currents of air in our atmosphere, by J. Hann.—On the finer structure of the electric organs of fish, especially of the species *Torpedo*, *Malapterurus*, and *Gymnotus*, by F. Bol.—On the point of combustion: a lecture delivered by A. Mitscherlich before the Chemical Section of the Association of Naturalists at Breslau.—On the fossil Cetacea of Europe, by J. F. Brandt.—On the diatoms of the coal age, by F. Castracane. The author succeeded in proving the existence of diatoms in a piece of Lancashire coal; it was powdered finely, and burnt in a stream of oxygen. The residue was treated with nitric acid and chlorate of potash, and then washed. The species he found were all sweet-water species, with the exception of a *Grammatophora*, a little *Coscinodiscus*, and an *Amphipleura*, and comprised the following:—*Fragilaria Harrisii*, Sm.; *Epithemia gibba*, Ehrbg.; *Sphenella glacialis*, Kz.; *Gomphonema capitatum*, Ehrbg.; *Nitzschia curvula*, Kz.; *Cymbella scotica*, Sm.; *Synedra vitrea*, Kz.; and *Diatoma vulgare*, Bory.—On the *Chaetopoda* of the Atlantic, by E. Ehlers; account of the results of a collection made on board the *Porcupine* in 1869.—Studies on the diameter of the sun, by P. Rosa. These studies were published after the death of the author, by Fathers Secchi and Ferrari, and contain many interesting details which are well worth the attention of astronomers.—On the absorption spectra of some yellow vegetable colouring matters, by N. Pringsheim. The result of these investigations seems to be that these colouring matters are merely modifications of chlorophyll, and that there exist numerous modifications of this substance, from the brightest yellow to the darkest green.—On the influence of the concentration of blood upon the motion of the blood-corpuscles.

SOCIETIES AND ACADEMIES

LONDON

Physical Society, May 8.—Prof. Gladstone, F.R.S., president, in the chair.—Mr. Crookes, F.R.S., exhibited and described some very important experiments on attraction and repulsion resulting from radiation, which he has recently submitted to the Royal Society, and of which an account has already been given in this journal (vol. xi. p. 494). It is unnecessary therefore to describe them at length, but it may be pointed out that the most beautiful of the instruments is one which Mr. Crookes calls a radiometer. It consists of four arms suspended on a steel point resting in a cup so that they are capable of revolving horizontally. To the extremity of each arm is fastened a thin disc of pith, lampblack on one side, the black and white faces alternating. The whole is enclosed in a glass globe, which is then exhausted as perfectly as possible and hermetically sealed. Several of these instruments varying in delicacy were exhibited, and experiments made showing the influence of light and heat of different degrees of refrangibility, and in proof of the law of inverse squares, &c.—The President, in expressing the cordial thanks of the Society, referred to Mr. Crookes' statement that the repulsion was proportional to the length of the vibrations, and asked whether at the red end of the spectrum there was an abrupt termination of the action, and a gradual diminution towards the ultra violet.—Mr. Walenn inquired as to the action of the magnet and of different axes of crystals in causing repulsion.—Prof. Woodward made some observations with reference to the manipulation.—Prof. Guthrie paid a graceful compliment to Mr. Crookes' work, and observed that researches might be divided into two classes; those in which the value of the work outweighed the merit of the author, and those in which a result of comparatively trifling significance is the outcome of years of patient labour. He expressed a strong conviction that Mr. Crookes' research had, in an almost unparalleled degree, both elements of greatness.—Mr. Crookes stated, in reply to Dr. Gladstone's question, that the glass envelope of the radiometer

must be taken into account in considering the action of the rays of different refrangibility, and further, that the increased effect due to red light may have been in part due to the concentration of rays of low refrangibility which attends the use of glass prisms. A diffraction spectrum might give a different result. He added that when a ray falls on a surface capable of motion, which reflects it, very little work is done, but if the surface quenches the ray, motion is produced. He then thanked Prof. Guthrie for his kindly remarks.—Prof. Cornu, of the Ecole Polytechnique, described his recent experiments on the determination of the velocity of light. He gave an account of the method of Foucault, and exhibited the complete apparatus, including the arrangement of mirrors for multiplying the distance traversed between the two reflections from the revolving mirror (NATURE, vol. xi. p. 274).—Prof. Adams, vice-president, mentioned that M. Cornu had contributed in no small measure to the success which had attended the formation in France of a society closely corresponding to our British Association, and assured him that the Physical Society felt grateful for his presence, as he could well understand the difficulties with which the early days of such a society are beset.—M. Cornu stated, in answer to a question of Prof. G. C. Foster, that he objected to the revolving mirror method, because the distance to be traversed by the light was very small, and because the path of the ray lay through a vortex of air produced by the rapid revolution of the mirror.

Royal Horticultural Society, April 7.—Scientific Committee. A. Grote, F.L.S., in the chair.—A communication was read from W. Wilson Saunders, F.R.S., describing a diseased condition of young poplars planted on the sides of roads in East Worthing. The disease seems sooner or later to be fatal to the tree, for he had not seen one tree attacked of which there seems any chance of recovery. The trees are from twelve to eighteen feet high, and with stems varying from five to seven inches in diameter. The disease is most apparent in large, rough, open wounds about the commencement of the lower branches, and on the stem; but upon closer examination symptoms of the disease will be found all over the tree, even to the tops of the branches. The disease seems to show itself at first by a longitudinal fissure in the bark, which fissure is nearly straight and but of little depth, having its lips slightly elevated and reflexed. At first the fissure does not penetrate the whole depth of the bark, but, gradually deepening and extending in length, the wood becomes exposed. This continues until the wood is quite exposed, and in a branch of two years' growth the disease assumes the appearance of a long open wound, exposing much of the wood which the growth of the bark partially covers up. Tracing the progress of the disease further, side fissures will be seen producing the same results; and these fissures, running one into the other, break up the bark until occasionally the disease extends all round the branch. When a branch gets diseased, the portion above the wound dies. The disease is often slow in progress, particularly when on the main stem, large open wounds then appear, of the same character as those on the branches, exposing much of the wood, but having the surrounding bark, although diseased and cracked, in a healthier state.—Mr. McLachlan referred to a note in the report of Lieut. Carpenter, of the American Geological Survey, in which it was stated that the Colorado Potato Beetle was distributed by means of seed potatoes, and that its absence in Utah and other parts of California was to be attributed to the fact that it has not yet been necessary to import seed potatoes.—Mr. Hemsley sent a turnip with a cavity in the interior of the root nearly filled by leaves growing from the crown downwards and inwards.—Prof. Thiselton Dyer exhibited under the microscope a portion of the plasmodium of *Æthelium*, showing the "streaming" movements of the protoplasm of which it is composed.

General Meeting.—W. Burnley Hume in the chair.—The Rev. M. J. Berkeley commented on the objects exhibited, including a group of species of *Drosera* and *Drosophyllum* exhibited by Messrs. Veitch.

April 21.—Scientific Committee.—Andrew Murray, F.L.S., in the chair.—The Chairman remarked that from his own observation there could be no doubt that the Colorado Potato Beetle was perfectly able to live in the climate of Canada.—Mr. Edmonds sent from the Gardens at Chiswick House a basket of *Peziza lanuginosa*.—Dr. Masters exhibited shoots of peach-trees which had been killed owing to having been thickly painted with colza oil.—Mr. Wilson Saunders communicated a note on a monstrous condition of the early St. John's Cabbage. When the bed of cabbages was about

at its best, a long, warm, very dry period was succeeded by much rain. The sudden impulse given to vegetation by this soon caused the solid heads of the cabbage to burst, and in a few days a series of smaller, well-shaped, rounded, compact heads were formed from the central axis of growth, closely touching each other, and backed up by the leaves of the original head, which remained green and full of sap. The number of these smaller heads varied from three to six in each cabbage.—Prof. Thiselton Dyer read an abstract from the *Sitzungsbericht der Gesellschaft Naturforschender Freunde zu Berlin* for Nov. 17, 1874, in which an account was given by Magnus of the production of graft hybrids in the potato by Reuter, the chief gardener at Potsdam, in 1874. He used the white long Mexican and the dark grey black kidney, both of which sorts had been introduced from America by the Novara Expedition. A wedge-shaped piece of the former, bearing an eye, was grafted upon the latter. The graft hybrids exhibited an intermediate character in form between the parents. They were broader and thicker than the long thin Mexican, longer than the black kidney. One of the potatoes also exhibited a blending of the colours. The two ends were red, and the middle zone greyish yellow. The dark grey colour of the black kidney is produced by the intense red sap in a layer of cells covered by the corky rind. In a subsequent communication Magnus mentioned similar experiments which had been made by Dr. Max Heimann, and communicated to the botanical section of the *Schlesische Gesellschaft in the Sitzungsbericht* for Nov. 19, 1872. Magnus described similar results obtained by Dr. Neubert, of Stuttgart, by herbaceous grafts of the stems.

General Meeting.—W. Burnley Hume in the chair.—Prof. Thiselton Dyer commented on the objects exhibited.

Anthropological Institute, May 11.—Col. A. Lane-Fox, president, in the chair.—Mr. Moncre D. Conway, M.A., read a paper on Mythology. He maintained that the evolution of mythology was the reverse of what the facts of physical evolution might suggest; it was not from beneath upwards to higher things, but rather from the grand in nature that the human mind had arrived at the association of mystical meanings with the stock and stone, plants and animals, which figured so largely in popular mythology. Sacred animals were consecrated as symbols of the higher phenomena. Flowers and plants derived their potency from connection with solar or lunar influences, still represented in the belief that to be healing they must be gathered at certain holy times or at certain phases of the moon. It was also maintained that the gods were personifications of power, and immoral; they were gradually divided into good and evil, the demoniac powers being for a long time not diabolical, but personifications of hunger, thirst, and the dangers and impediments of life. The idea was combated that men had ever worshipped purely evil powers. The legend of Eden was held by Mr. Conway to be inexplicable by Semitic analogues. In India were found the myths of serpent-guarded trees and the apple of immortality, and the curse on the serpent which had puzzled theologians was explained by the theory of transmigration.—A paper by Rev. A. H. Sayce, M.A., was read, on Language and Race. The author held that the fallacy of language as a sure and certain test of race is one to which few modern philologists would commit themselves. There was no assertion which could be more readily confronted with history, or when so confronted, more clearly be demonstrated to be false. Society implied language, race did not; hence, while it might be asserted that language is the test of social contact, it might be asserted with equal precision that it is not a test of race. Language could tell us nothing of race. It did not even raise a presumption that the speakers of the same language were all of the same origin. It was only necessary to look at the great States of Europe, with their mingled races and common dialects, to discover that language showed only that they had all come under the same social influences. Race in philology and race in physiology meant very different things.—Mr. A. W. Franks, F.R.S., exhibited an inscribed wooden gorget from Easter Island.

Entomological Society, May 3.—Sir Sidney Smith Saunders C.M.G., president, in the chair.—The President exhibited male specimens of *Stylops*, taken by himself in the pupa state, on *Andrena atriceps*, at Hampstead Heath, on the 6th, 9th, and 17th April last. Mr. Enoch, who had been there on the 6th at an earlier hour (between nine and ten o'clock) had been still more successful, having captured 17 males, one of which, however, was taken after 2 P.M. The President drew attention to the remarkable difference observable in the cephalothorax of the

females in these specimens, as compared with those met with on *Andrena convexiuscula*, and remarked on the importance of not confounding the species obtained from different *Andrena*, *Stylops Spencii* having been described from *A. atriceps*, while *S. Thwailei* had been described from *A. convexiuscula*. Mr. Smith believed that eventually a great many species would be found to inhabit this country, and that as many as a dozen different species would probably be found on the genus *Andrena* alone, independently of *Halictus*.—Mr. M'Lachlan read an extract from a report made to the Royal Society, on the Natural History of Kerguelen's Island, by the Rev. A. E. Eaton, who was attached as Naturalist to the Transit of Venus Expedition to the island (NATURE, vol. xii. p. 35). Nearly all the insects were remarkable for being either apterous or with greatly abbreviated wings. Mr. M'Lachlan said that the theory as to the apterous condition of the insects was that the general high winds prevailing in those regions rendered the development of wings useless; and Mr. Jenner Weir remarked that the apterous condition was correlated with the fact that plants under similar circumstances were apetalous and self-fertilising; and hence it was supposed that the existence of winged insects was unnecessary.—Mr. C. O. Waterhouse exhibited a *Chelifer* which he had discovered under the elytra of a *Fassalus* from Rio Janeiro.—Mr. C. O. Waterhouse also exhibited a drawing of a Neuropterous insect of the family *Ascalaphidae*, from Swan River, presenting the peculiarity of having a large bifid hump on the basal segment of the abdomen, dorsally, each division of the hump bearing a crest of hairs. He believed it to be the male of *Suphalasca magna*, M'Lachlan.—Mr. Wormald exhibited a collection of Coleoptera, Neuroptera, and Lepidoptera, sent by Mr. H. Pryer, from Yokohama.—Prof. Westwood communicated descriptions of some new species of short-tongued bees belonging to the genus *Nomia*, Latreille; and also a paper, on the species of *Rutelidae* inhabiting Eastern Asia and the islands of the Eastern Archipelago.—Mr. C. O. Waterhouse communicated a description of a new species belonging to the *Lucanidae* (*Prosopocelus Wimberleyi*), by Major F. J. Sidney Parry; and also a description of the male of *Alcimus dilatatus*, by himself.

Royal Microscopical Society, May 5.—Mr. H. C. Sorby, F.R.S., president, in the chair.—A discussion took place upon a paper read at the last meeting by the president, upon spectrum analysis by means of the microscope, and some additional particulars of interest were furnished by the author in reply to questions addressed to him by Dr. Pigott, Dr. Matthews, Mr. Slack, and Mr. Crisp.—Mr. Slack read a paper on the relation of angular aperture to surface markings and accurate vision, in which he showed the fallacy of the present system of using high-angled objectives for these purposes to the exclusion of those of small angular aperture, and pointed out that extreme angles were only to be obtained at the expense of accurate correction and penetrating power.

CAMBRIDGE

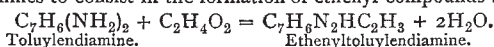
Philosophical Society, May 3.—A communication was made by Mr. Pirie, on a method of introducing a current into a galvanometer circuit. Mr. Pirie said that electricians had often to work with currents far too strong for their galvanometer. He mentioned various methods in use for checking the swing of the needle; but contended that an easily made and easily used controller for rough work was a desideratum. He described an instrument in the form of a continuously varying shunt, in which a moving connection was obtained by a tube filled with mercury sliding on a wire of suitable resistance. This form of connection was first used by Prof. Barrett of Dublin. With the aid of Mr. Garnett, the Demonstrator of Physics, Mr. Pirie showed that a very good connection was obtained by this means; and subsequently, that the instrument described gave a control over the movements of the needle in a galvanometer whose resistance was not too different from its own.

GLASGOW

Geological Society, April 15.—Mr. James Thomson, F.G.S., vice-president, read a paper on the geology of the River Liddel, Dumfriesshire. He described several fine sections exposed along the banks of that river, showing wonderful contortions, with great "faults" and "down-throws" of strata. He also referred to the striking identity of the fossils found in a band of impure limestone in that district with those found in many parts of the Ayrshire and Lancashire coal-fields.—Mr. Thomson also read some notes on new species of carboniferous corals, giving an account of his recent investigations in that department.

BERLIN

German Chemical Society, May 10.—T. Böhm studied the influence of various salts on the growth of *Phaseolus multiflorus*, and found lime salts alone efficient for the culture of these plants.—G. Gerlich, bringing into contact sulphocyanide of potassium or of ammonium with bromide of allyl, obtained sulphocyanide of allyl when the reaction was allowed to take place at 0°, while at higher temperatures the isomeric mustard-oil prevailed.—L. Nilson has studied the selenites of beryllium, lanthanum, cerium, didymium, yttrium, erbium, and yttrium. The former metal appeared to enter into the salt as a diad, the rest as triads; thorium as a tetrad.—V. Hæmilian has proved the presence of a considerable portion of ordinary alcohol in commercial methylic alcohol.—L. Pfaundler stated the influence various solvents have on the proportion in which a base is divided between two acids.—W. Ebstein and J. Müller have isolated the ferment contained in the liver and found its action on glycogen to disappear not only when phenol but when the trace of any acid was added.—O. Fischer has transformed methyl-anthracene into methylalzarine, C₁₅H₁₀O₄.—A. Ladenburg observed the action of acetic acid on diamines to consist in the formation of ethenyl compounds:



—V. Meyer and W. Michler, by treating disulphobenzolic acid with cyanide of potassium and potash, have obtained both terephthalic and isophthalic acid in the same reaction.—Drs. von Mering and Musculus, after giving large quantities of chloral to patients, have found an acid in the urine of the composition C₇H₁₂Cl₂O₆. They deny the decomposition of chloral into formic acid and chloroform to take place in the human system.—P. T. Austin, treating chloronitrobenzol C₆H₃(NO₂)₂Cl with ethylate of sodium, has obtained the ether C₆H₃(NO₂)₂OC₂H₅.—A. W. Hofmann has observed the following reaction of cyanogen on mercaptans RSH + CN₂ = CNH + R—S—C = N. Where R is C₃H₅ allyl, the sulpho-cyanide is first obtained, which at ordinary temperatures passes into the isomeric oil of mustard.—R. Lussy has been able to combine one molecule of toluylenediamine with two molecules of phenyl-iso-sulphocyanate. The compound diphenyl-toluylen-sulphurea, when treated with hydrochloric acid, yields aniline and the mustard-oil of toluylene C₇H₆(NCS)₂.

BOOKS AND PAMPHLETS RECEIVED

BRITISH.—A Sketch of Philosophy: J. G. Macvicar, LL.D., D.D. (Wm. Blackwood and Sons).—Wanderings in the Interior of New Guinea: Capt. J. A. Lawson (Chapman and Hall).—The Chemistry of Light and Photography in its applications to Art, Science, and Industry: Dr. Hermann Vogel (H. S. King and Co.).—Fourth (December 1872 to December 1873) and Fifth (December 1873 to December 1874) Annual Reports of the Wellington College Natural Science Society.—Vestiges of the Molten Globe: William Lowthian Green (E. Stanford).—The Native Races of the Pacific States. Vol. ii.: Hubert Howe Bancroft (Longmans).—The Province of Psychology.—The Inaugural Address at the First Meeting, April 14, 1875, of the Psychological Society of Great Britain, by the President, Mr. Serjeant Cox.—On the Distribution of Rain over the British Isles during the Year 1874. Compiled by G. J. Symons, F.R.B.S. (E. Stanford).

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